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DRAFT WATERSHED PROGRAM PLAN



OCTOBER 23, 1998

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APPENDIX A

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GLOSSARY

Note to Reader:

This section is currently under development.

Adaptive management:

Bay-Delta system:

Beneficial use:

Common program:

Comprehensive Monitoring, Assessment, and Research Program (CMARP): A program currently under development by the CALFED Bay-Delta program to identify the monitoring, assessment and research needed for CALFED-related projects, actions, and activities. CMARP is a critical component of the CALFED adaptive management strategy.

Ecosystem: An interactive system that includes the organisms of a natural community association together with their abiotic physical, chemical, and geochemical environment.

Ecosystem management: Management of watershed land and aquatic resources based on perspective of ecosystem structure, function, and dynamics aimed at long-term sustainability of watershed productivity. Ecosystem management integrates scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term.

Floodplain: Level lowland bordering a stream onto which the stream spreads at flood stage.

Geographic information system (GIS): Computer programs that link features commonly seen on maps (such as roads, town boundaries, waterbodies) with related information not usually presented on maps, such as the type of road surface, population, type of vegetation, land use, or water quality information. A GIS is a unique information system in which individual observations can be spatially referenced to each other.

Government agencies: Federal, state, county, city, and town governments; Native American governments; and special districts.

Implementation monitoring: Sampling of management activities to determine whether practices are adequately applied as specified.

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Interagency Watershed Advisory Team (IWAT): A group of 15 individuals representing 11 CALFED lead and cooperating agencies. The IWAT functions to help direct the development and implementation of the Watershed Program. The IWAT meets on a regular basis to discuss the progression of the Watershed Program.

Monitoring: The organized collection of information over time to aide the understanding process of a watershed system. The information may be used in watershed assessment, watershed planning, and in overall watershed management decision making. Monitoring is also used to track the implementation accuracy and effectiveness of specific policies and projects.

Performance measures: A means to gauge the progress of an action. Progress may be judged based on a variety of factors.

Riparian restoration: Management activities aimed at changing the size, density, species composition, or other characteristics of riparian vegetation to improve ecosystem functions.

Runoff: The part of precipitation and snowmelt that reaches streams by flowing over- and/or under-ground.

Sediment: Fragments of rock, soil, and organic material transported and deposited in streambeds by wind, water, or other natural phenomena.

Tributary: Stream flowing into a lake or larger stream.

Watershed: Total land area draining to any point in a stream.

Watershed activity: One of the several and diverse actions and decisions that cumulatively amount to watershed management.

Watershed analysis: A systematic process to describe current watershed conditions and develop prescriptions to prevent individual and cumulative environmental impacts.

Watershed group:

Watershed management: The net result of numerous and varied actions in a watershed that directly affect watershed function and productivity. Actions may include, but are not limited to, land use decision making, restoration and enhancement projects, monitoring and assessment of watershed condition, natural resource allocation and use, parcel management techniques and education programs.

Watershed project:

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Watershed restoration:

Watershed scale: Taking place at the watershed level, as opposed to smaller geographic areas (such as fields or sub-basins).

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ACRONYMS

BDAC	Bay-Delta Advisory Council
CALFED	CALFED Bay-Delta Program
CMARP	Comprehensive Monitoring, Assessment and Research Program
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
IWAT	Interagency Watershed Advisory Team
RCD	Resource Conservation District

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WHAT'S NEW IN THE WATERSHED PROGRAM PLAN

Since the original publication of the CALFED Watershed Management Strategy, much progress has been made in the development of the Watershed Program. Foremost, the original strategy and founding documents (i.e., goals and objectives, principles of the Watershed Program, etc.) have been reviewed and assessed by CALFED staff, the Interagency Watershed Advisory Team (IWAT), the BDAC Watershed Work Group, and stakeholders throughout the state. CALFED staff and the IWAT have taken the comments received and, with the help of stakeholders, created this Draft Watershed Program Plan.

Much attention has been focused on the following key components of the Watershed Program:

- Refined Geographic Scope
- Refined Goals and Objectives
- Description of the Watershed Program Plan Elements
- Principles of Participation
- Description of the Implementation Strategy

In addition, sections regarding adaptive management and monitoring, and financing have been added, as well as a glossary of terms.

The Watershed Program will continue to be improved in response to comments, monitoring, and research.

OVERVIEW

INTRODUCTION TO THE CALFED BAY-DELTA PROGRAM

The mission of the CALFED Bay-Delta Program (CALFED Program) is to develop a long-term comprehensive plan that will restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. In addition, the CALFED Program has identified a set of solution principles and primary objectives to support the mission statement.



The CALFED Bay Delta Program consists of eight integrated elements (six common programs and two variable programs). The six common programs include: Water Quality, Water Use Efficiency, Ecosystem Restoration, Levee System Integrity, Water Transfers, and the Watershed Program. The elements of the common programs consists of hundreds of individual actions which will be implemented over a 20 to 30 year period. The common programs will be guided by specific policy direction and an ongoing adaptive management framework, and require local partnerships, coordination and cooperation.

In addition to the common programs are two variable programs - storage and conveyance. The implementation of these programs will

largely depend on the preferred alternative chosen. Some of the alternatives include provisions for new or expanded water storage, and each alternative includes modification of Delta conveyance. The combination of the common and variable programs, coupled with related assurances, financing, and monitoring, and the preferred alternative will create a comprehensive package that, when implemented together, must reduce conflicts in the Bay-Delta system. This comprehensive package will move forward to meet the primary objectives of the CALFED Program: ecosystem quality, water supply reliability, water quality, and levee system integrity.

Ecosystem Quality

Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.

The Bay-Delta system no longer provides the diversity or quality of habitats needed to maintain ecological functions and support healthy populations and communities of plants and animals. Declining fish populations and endangered species designations have created major conflicts among beneficial uses of water in the system.

The CALFED Program will take needed actions to begin recovery of ecosystem health by reducing or eliminating factors that degrade habitat, impair ecological functions, or reduce population size or health of species.

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Water Supply

Reduce the mismatch between Bay-Delta water supplies and the current and projected beneficial uses dependent on the Bay-Delta system.

As water diversions and competition among uses have increased over time, conflicts among users of Delta water have also increased. As the system is managed in an effort to meet export demands, flow requirements for fish and wildlife needs, and to address water quality concerns, the uncertainty of Delta water supplies has increased.

The CALFED Program seeks to reduce the mismatch between supply and beneficial uses through a variety of actions including demand-side management, reducing the impacts of water diversions on the Bay-Delta system, and increasing the system's flexibility to store and transport water.

Water Quality

Provide good water quality for all beneficial uses.

The Delta is a source of drinking water for millions of Californians and is critical to the state's agricultural sector. In addition, good water quality is required to maintain the high quality habitat needed in the Bay-Delta system to support a diversity of fish and wildlife populations.

The CALFED Program will undertake actions to reduce or eliminate parameters that degrade water quality at its source.

Levee System Integrity

Reduce the risk to land use and associated economic activities, water supply,

infrastructure, and the ecosystem from catastrophic breaching of Delta levees.

The existing system of Delta levees protects towns, farmland, wildlife habitat, and infrastructure from flooding and costly damages. The levee system provides an effective means to limit salt water intrusion into the Delta. However, the current degraded status of many Delta levees leaves the system vulnerable to catastrophic failure, either by flooding or earthquake.

The CALFED Program will implement a comprehensive plan to address long-term levee maintenance, stabilization, and emergency levee management while providing opportunities to enhance ecosystem values.

In conjunction with the primary objectives of the CALFED Program, the following solution principles were developed to guide the evaluation process for each alternative and to provide an overall measure of acceptability:

Reduce Conflicts in the System

Solutions will reduce major conflicts among beneficial uses of water.

Be Equitable

Solutions will focus on solving problems in all problem areas. Improvements for some problems will not be made without corresponding improvements for other problems.

Be Affordable

Solutions will be implementable and maintainable within the foreseeable resources of the CALFED Program and stakeholders.

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Be Durable

Solutions will have political and economic staying power and will sustain the resources they were designed to protect and enhance.

Be Implementable

Solutions will have broad public acceptance and legal feasibility, and will be timely and relatively simple to implement compared with other alternatives.

Have No Significant Redirected Impacts

Solutions will not solve problems in the Bay-Delta system by redirecting significant negative impacts, when viewed in their entirety, within the Bay-Delta or to other regions of California.

The CALFED Program is being completed in three discrete phases. Phase I, completed in September 1996, identified the problems confronting the Bay-Delta, developed a mission statement and guiding principles, and devised three preliminary categories of solutions.

Phase II of the CALFED Program included the development and release of the Draft Programmatic Environmental Impact Statement/Environmental Impact Report (Programmatic EIS/EIR) which was released in March 1998. Phase II will conclude with the selection of a preferred program alternative and development of an implementation strategy including financing and assurances.

The completion of the Final Programmatic EIS/EIR will mark the beginning of Phase III. Implementation is expected to begin January 2000, and will continue for 20 to 30 years.

The Watershed Program was established to aide in CALFED's mission and help achieve the primary objectives. The Watershed Program will employ a comprehensive, integrated, basin-wide approach to help solve problems of the Bay-Delta system, emphasizing local participation and government cooperation at all levels.

The purpose of this report is to detail the results of the Watershed Program activities conducted during Phase II of the CALFED Program and to highlight those activities planned in Phase III.

WATERSHED PROGRAM GOAL AND OBJECTIVES

The goal of the Watershed Program is to help coordinate and integrate existing and future local watershed programs and to provide technical assistance and funding for watershed activities and protection relevant to achieving the goals and objectives of the CALFED Program.

GOAL

Help coordinate and integrate local watershed programs and provide funding and technical assistance for watershed activities and protection.

The Watershed Program intends to foster and support local watershed management. While recognizing the importance of project implementation, the Watershed Program also acknowledges that watershed management consists of more than just projects. It includes such diverse issues as land use decision making, parcel management

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techniques, restoration and enhancement projects, monitoring, and education programs, for example. The Watershed Program will emphasize the importance of locally based environmental protection and enhancement in attaining the goals of the CALFED Program.

To reach these goals, the Watershed Program has established the following primary objectives:

- **Facilitate and improve coordination and assistance among government agencies, other organizations, and local watershed groups.**

There is an existing broad array of government programs, non-governmental organization efforts, and local initiatives. The Watershed Program will encourage and support collaboration among these diverse interests to enhance and restore watershed functions in the Bay-Delta systems.

- **Develop watershed monitoring assessment and protocols to be integrated into CMARP.**

Adaptive management is only possible when an adequate feedback loop is available to assess decisions and projects based on their outcomes. Effective monitoring programs that are based on sound science and that include a wide range of participants will help assure continually improving management decision making for improving watershed health.

- **Support education and outreach.**

Information flow is critical to sound

management decision making. An education and outreach program that exchanges information among watershed constituents will enhance the mutual pool of knowledge available in any given community. The enhanced information exchange will better inform public and private decision making, and will improve watershed management decisions at all level.

- **Integrate the Watershed Program with the other CALFED Common Programs.**

The other common programs of the CALFED Program promote many activities that improve conditions in the greater watershed of the Bay-Delta System. It is important that the Watershed Program integrate with these other activities in order to effectively leverage the energy and funds available to meet the CALFED Program goals.

- **Define the relationship between watershed processes and the CALFED Program goals and objectives.**

The function of a watershed is comprised of a plethora of physical, biological, and social processes. The Watershed Program will seek to define those processes which are relevant to achieving the goals and objectives of the CALFED Program.

- **Implement a strategy which will assure support and long-term sustainability of local watershed activities.**

To effectively manage a watershed for maximum health, a long-term commitment to

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management and monitoring is necessary. To this end, the Watershed Program will seek to secure long-term support to promote sustainability in the watersheds of the Bay-Delta system.

WATERSHED PROGRAM BACKGROUND

Originally, the CALFED Program consisted of four common programs, each program stemming from the four primary objectives. During Phase II, however, it was recognized that two additional common programs were needed because of their multi-objective impact - Water Transfers and the Watershed Program.

In March 1998, the CALFED Watershed Management Strategy (Strategy) was released as an appendix to the Programmatic Environmental Impact Statement/ Environmental Impact Report (Programmatic EIS/EIR). The Strategy was an attempt to establish a framework for the Watershed Program. The document discussed the vision for watershed management, the geographic scope and goals for CALFED funded watershed projects, and the need to coordinate with ongoing watershed efforts. Since the release of the Strategy in March 1998, much progress has been made in the development of the Watershed Program.

In March 1998, the Interagency Watershed Advisory Team (IWAT) (see Appendix) was formed. The IWAT consists of 15 individuals representing 11 CALFED lead and cooperating agencies. The IWAT functions to help direct the development and implementation of the Watershed Program.

The IWAT meets on a regular basis to discuss the elements of the Watershed Program and acts as a liaison for their agency.

In accordance with CALFED efforts to include public participation as an essential component of the CALFED Program, two Regional Watershed Stakeholder Meetings (Stakeholder Meeting) were held in April 1998. The first Stakeholder Meeting was held in Sacramento on April 23, 1998; the other was held in Redding on April 30, 1998. There were over 125 attendees at each meeting. In addition to the Stakeholder Meetings, a Bay-Delta Advisory Council (BDAC) meeting was held in Redding on May 14, 1998, in which watershed issues were the focus.

The Stakeholder and BDAC meetings were intended to provide information about the development of the Watershed Program and encourage stakeholders to participate in the process. Large portions of the meetings were designated for public comments. Many participants stated that stakeholder involvement and communication among interested parties should be a critical component of the Watershed Program. Strong support was given to the idea of the formation of a "Watershed Work Group" comprised of stakeholders.

Based upon the public's request to have more participation in the Watershed Program, the Bay-Delta Advisory Council (BDAC) Watershed Work Group was formed in July 1998. The Work Group provides a forum for stakeholders covering a broad geographic area and wide array of interests. The Work Group is composed of 25 individuals representing local watersheds

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throughout the state, local government, agriculture and timber interest, among others. In addition, the Work Group meetings are opened to the public and draw other volunteers dedicated to building a successful Watershed Program. Work Group Meetings are held throughout the state to ensure the opportunity for all stakeholders to participate.

Attendees of the Work Group meetings have direct interaction with the IWAT and an opportunity to review and comment on activities related to the Watershed Program. The Work Group was instrumental in the formation of key components of the Watershed Program Plan, such as the goals and objectives, Principles for Participation, and Stage I implementation actions.

In addition to the Work Group meetings, two BDAC Watershed Public Workshops were held in September 1998; one in Stockton, the other in Redding. The purpose of these workshops was to inform the general public about activities of the Watershed Program and to share the knowledge gained from the Work Group meetings. In addition, CALFED gained valuable insight from the comments of the workshop participants.

Stakeholder involvement in the Watershed Program is planned to continue throughout the life of the CALFED Program.

GEOGRAPHIC SCOPE

The CALFED Program is addressing problems which are manifested in or closely linked to the Suisun Bay/Suisun Marsh and

Delta area (Problem Scope). However, the scope of possible solutions (Solution Scope) to these problems encompass any action which can be implemented by the CALFED agencies or can be influenced by them to address the identified problems, regardless of whether implementation takes place within the Delta/Suisun Bay/Suisun Marsh area.

Any problem currently associated with (1) the management and control of water or (2) the beneficial use of water within the Bay-Delta (including both environmental and economic uses) is within the purview of the CALFED Program if at least part of the problem is manifested within the Bay-Delta or is directly associated with conditions within the Bay-Delta.

In contrast to the Problem Scope, the Solution Scope is quite broad, potentially including any action which could help solve identified problems. Since there is a wide range of actions encompassed within the basic project purposes and solutions, it follows that various actions will affect different geographic areas depending upon the nature and location of the action. Thus, although each action will not affect the entire geographical solution area, certain actions will directly or indirectly affect areas within the Central Valley watershed, southern California system service area, Suisun Bay, San Pablo Bay, San Francisco Bay, portions of the Pacific Ocean out to the Farallon Islands, and a near-coastal band extending from Morro Bay to the Oregon border.

An expanded solution scope is necessary because many problems related to the Bay-Delta are caused by factors outside the Bay-Delta. Moreover, an expanded solution scope is desirable from a planning point of

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view because more benefits may be generated at lower cost if solutions are not limited to the geographic Bay-Delta. For example, the problem of declining salmon populations is linked to the Bay-Delta because of high salmon mortality during salmon migrations. However, the broader problem of declining salmon populations goes far beyond the Bay-Delta. One solution action might be to reduce salmon mortality during salmon migration through the Bay-Delta. However, it might be less expensive to combine that action with an effort to promote greater salmon protection upstream.

The Watershed Program will support activities that provide benefits to the Problem Scope. Furthermore, watershed activities should support the goals and objectives of the CALFED Program and advocate the Principles of the Watershed Program.

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WATERSHED PROGRAM ELEMENTS

INTRODUCTION

The Watershed Program is intended to enhance natural resource conservation, restoration, and management using a collaborative approach that encourages broad participation of all stakeholders in the greater watershed of the Bay-Delta system. Watershed management that is effective over the long term must go beyond the policy level and become personally relevant at an operational level. Extensive participation by diverse parties in improving the status of natural resources generates maximum energy and creativity in implementing sustained, effective watershed planning and management. The Watershed Program will facilitate the development of locally appropriate, community based strategies to maintain and improve watershed conditions to achieve the goals and objectives of the CALFED Program.

Watershed activities supported by the Watershed Program must not only be technically appropriate, but socially and politically in concert with local needs and desires. The Watershed Program will support on-the-ground activities such as restoration projects and stream corridor rehabilitation, forest improvement projects, and water quality enhancement. It will also support activities that provide guidance or that establish a framework for implementation of those types of projects. Such activities may include developing local capacity for watershed management in diverse arenas, providing technical assistance as requested, enumerating good management practices, providing assistance and training

for monitoring programs, and supporting locally developed education programs.

Management of complex systems such as watersheds requires a significant steady flow of reliable information. The Watershed Program will also emphasize activities that improve the diversity and reliability of information generation, analysis, distribution and use. Activities that make information more available to those who need it, and in formats that facilitate effective use of the information will be supported and broadened. Information sharing among watershed constituents will stimulate the transfer of local expertise and experience to other venues that may benefit from those ideas and experiences. Extensive access to information and shared experiences stimulates formation of collaborative partnerships. The Watershed Program will support those partnerships by providing and/or arranging for the provision of technical and other assistance.

In the course of developing, obtaining, and distributing these sources of information and assistance, the Watershed Program will work with the other common programs of CALFED to ensure the integration of the many and varied projects and programmatic actions of the common programs that pertain to improved watershed management in the Bay-Delta system. Liaison among the common programs will be an important aspect of developing the Watershed Program, and in promoting a comprehensive and coordinated large scale effort to attain the goals and objectives of the CALFED Program in a manner that supports and

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stimulates local community leadership in
establishing effective management of the
greater watershed of the Bay-Delta-system.

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COORDINATION AND ASSISTANCE

Facilitate and improve coordination and assistance among government agencies, other organizations, and local watershed groups.

The greater watershed of the Bay-Delta system is composed of many tributary watersheds, each with still further division into smaller tributary watersheds. Effective management of those lands to sustain high levels of productivity for all resources is complex. No single entity, group, agency or government can handle the chore alone. The Watershed Program will facilitate means and opportunities to improve coordination and collaboration among all stakeholders – including government and non-government interests – seeking to better manage watershed resources.

Watershed management involves many levels of activity, including planning, policy establishment, project and program development, implementation of policy and projects, and information gathering and analysis (monitoring). This complex suite of activities is best accomplished through collaborative efforts among partners in the watershed. These partners may include governments at all levels, government agencies, ad hoc watershed groups, individuals, trade organizations, interest groups, and many others who are active in a given watershed. The Watershed Program will facilitate the development of communication links and mutual support mechanisms to encourage the coordination

of the varied activities of watershed constituents. The links and mechanisms developed will support the involvement of diverse interests at all levels of watershed management, with emphasis on sustaining watershed health through consensus management.

- **Identify government agencies and watershed groups that participate in watershed activities consistent with the CALFED goals and objectives.**

In any given watershed, there are often many different constituents working to improve the watershed condition. This action item will assist those constituents to find and collaborate with other groups in their area to promote projects and activities that support the goals and objectives of the CALFED Program. In the greater watershed of the Bay-Delta system, the number and diversity of entities involved in watershed management is quite large.

Identifying and describing the many efforts and distributing that knowledge amongst watershed constituents will contribute to the formation of collaborative partnerships. Opportunities to coordinate and collaborate are often missed when knowledge of proposed and existing programs is not widespread. Describing the relationship of the programs to the attainment of CALFED goals and objectives will further enhance the possibility for active coordination amongst watershed management efforts.

- **Identify and recommend types of partnerships that could be formed.**

As the Watershed Program is implemented,

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opportunities for collaborative partnerships will arise. A significant part of the Watershed Program will support the generation and exchange information, which will facilitate coordination and stimulate collaboration among entities. The Watershed Program will actively participate in the promotion of specific partnerships among watershed constituents at all levels that have the potential to help achieve the goals and objectives of the CALFED Program.

Organizational approaches to local watershed management have many variations in California. Alternatives include Coordinated Resource Management, watershed conservancies, watershed task forces and working groups, local stewardship, and other local agency led programs by counties, Resource Conservation Districts, water districts, and others. The appropriate structure for implementing the recommended watershed management partnerships will depend on the interests and circumstances of the affected watersheds, as well as those of the potential partners.

- **Describe mechanisms to coordinate funding among government agencies and to local watershed programs.**

There are presently a wide range of funding sources among governments and their agencies at all levels. There is presently no easy means of gaining access to knowledge of all these varied funding sources. The Watershed Program will develop or support the development of means to provide clear and direct connections for local programs to find appropriate assistance to help further

their efforts. The Watershed Program will also identify and recommend mechanisms intended to generate funding partnerships. These mechanisms will identify co-relations between the objectives of various funding programs, and means to combine programs to increase their effectiveness and ease of use by local watershed groups.

- **Describe mechanisms to facilitate technical assistance from government agencies and others to local watershed programs.**

Agencies, governments, organized groups, and other entities have a very large cumulative pool of expertise and talent that may be better distributed for application in local operational watershed management. The Watershed Program will develop or support the development of a mechanism to provide easier access to the technical assistance available from these sources. The mechanism(s) will enable clear and direct connections for local programs and others to obtain appropriate and timely assistance in the development and implementation of watershed management activities.

The Watershed Program will also work with CALFED agencies to elevate the priority of working with local groups as a means of executing agency responsibilities. Through highlighting possible partnerships and identifying compatible goals and objectives among local watershed groups and those agencies, the Watershed Program will illustrate the advantages of a collaborative approach to environmental management in the watershed of the Bay-Delta system. The Watershed Program will also demonstrate the fiscal advantages of collaborative partnerships in watershed management.

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- **Improve collaboration between existing and future programs to achieve mutual watershed management objectives.**

In most cases, the objectives of various watershed management initiatives and projects are similar. They are often stated differently, however, according to the specific needs and desires of the watershed community or entity promoting the initiative or project. The Watershed Program will provide assistance in describing these varying statements of objective in such a way as to clarify and highlight the areas of mutual effort. The greater availability of information about various programs among groups working to improve the watershed of the Bay-Delta will enable quicker formation of collaborative, locally appropriate efforts that more efficiently utilize the resources available.

Support for greater availability of information and technical assistance will also assist with the more rapid development of new groups as they may form in coming years. Through identification and encouragement of new types of partnerships, and through demonstration of success of those new partnerships, the Watershed Program will enhance the combined results of watershed management programs throughout the Bay-Delta watershed.

- **Encourage collaboration with local general plans and regulations.**

A very significant part of land management decision making in California is the guidance given by local governments through their general plans. The Watershed Program recognizes the important role that general

plans play in watershed management. It will encourage projects and programs to become familiar with, and to follow the guidance given by local general plans. As appropriate, it will also support efforts to strengthen the awareness of watershed management issues in the scheduled revisions of those plans at the local level.

General plans are implemented in part through local regulations. These local regulations are an important piece of the fabric of watershed management in the tributary watersheds to the Bay-Delta system. The Watershed Program will ensure that supported efforts are consistent with, and supportive of, local regulations and policies. Through its developing information exchange network, it will also distribute information regarding local regulation and policies to enable other locations to provide easy access to multiple examples of how specific local jurisdictions have dealt with a wide range of issues.

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ADAPTIVE MANAGEMENT AND MONITORING

**Develop Watershed Monitoring
Assessment and Protocol to be
Integrated into the Comprehensive
Monitoring, Assessment, and
Research Program (CMARP)**

Adaptive management is the process of refining or redefining management actions as a process unfolds and results are obtained. It is an interactive and iterative approach to decision making that incorporates feedback loops to evaluate actions and inject new information as it becomes available.

Adaptive management begins by implementing actions most likely to achieve implementation objectives, given today's knowledge. Experimental management is included where improved knowledge is essential. Results are monitored and actions modified as necessary to achieve management goals. Adaptive management processes may also lead to the modification of management goals.

Adaptive management and monitoring are key program elements necessary to understand watershed resource conditions and the effects of Watershed Program actions on these conditions. Given the uncertainties involved in watershed management, an adaptive management approach is essential to establishing a learning process that reduces these uncertainties over time. Adaptive management and monitoring processes will measure the success of meeting objectives and help understand what corrective steps

need to be taken when these objectives are not being achieved. The adaptive management and monitoring will be carried out throughout the life of the CALFED Program.

To understand who Watershed program actions affect watershed resource conditions over time, an initial inventory and assessment of existing conditions is required. In some cases, information on current conditions is already available; in other cases, this information will need to be collected prior to the initiation of Watershed Program actions.

To ensure that adaptive management and monitoring are adequately developed and implemented as a part of the Watershed Program, the following actions will be taken by Watershed Program staff, other CALFED staff, the Interagency Watershed Advisory Team (IWAT), and Watershed Program cooperators.

- **Define performance measures that ensure adaptive management processes can be applied at multiple scales and across ownerships.**

Building on the Principles for Participation, the Watershed Program, working with IWAT and other stakeholders, will develop specific performance measures to be used in the adaptive management process. These performance measures will be applied to Watershed Program activities as well as to watershed activities implemented by others using CALFED funding. Performance measures will be reviewed and updated periodically throughout the life of the CALFED Program.

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- **Watershed groups, IWAT, and other stakeholder input will help CMARP develop watershed management monitoring protocols that are not already developed for the other CALFED Common Programs.**

The Watershed Program will coordinate with CMARP to identify the fundamental biophysical and social parameters for watershed functions and processes. These parameters will be identified based on the performance measures developed by the Watershed Program. Based on these identified parameters, the Watershed Program will coordinate with CMARP to develop the monitoring and assessment protocols appropriate to measure these parameters. The Watershed Program will work with the IWAT and other stakeholders in the identification and development of these parameters and monitoring and assessment protocols.

- **Facilitate monitoring efforts that are consistent with CMARP's protocols.**

The Watershed Program will facilitate monitoring and assessment efforts consistent with CMARP protocols through a number of means. The Watershed Program will encourage and support local watershed organization efforts to collect and assess data in accordance with CMARP protocols and to share data and assessments with CALFED and stakeholders. Encouragement and support include monitoring and assessment protocol training programs for watershed projects, funding watershed groups' monitoring and assessment efforts,

and requiring CMARP - compliant monitoring and assessment as a part of projects funded by CALFED. The Watershed Program values the contributions that collection of data by watershed groups and other local organizations can make to CALFED objectives, assessment and protection of watershed resources, and the empowerment of local organizations and institutions. The Watershed Program will take these steps from the time that the CMARP protocols are developed through Stage I implementation and the entire life of the CALFED Program.

The Watershed Program will also serve as a repository for monitoring data collected and assessments completed under the Watershed Program and the projects and activities that the Watershed Program supports. The Watershed Program will use this information as a part of its own adaptive management processes. The Watershed Program will play this role through Stage I implementation and the entire life of the CALFED Program.

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EDUCATION AND OUTREACH

Support Education and Outreach

Many local watershed programs are in their formative stages. Those that are established may have areas where they lack resources or information to function efficiently.

CALFED will develop a support framework for local watershed programs so these programs can function more efficiently. Resource needs identified by stakeholders include:

- Funding assistance to implement planning, projects, and monitoring;
- Funding for staff to coordinate local watershed activities, including environmental educational programs;
- Assistance from local agencies with planning, implementation, and monitoring;
- Centralized or coordinated resource information centers on funding opportunities, workshops, outside assistance available such as technical experts, etc.;
- Centralized or coordinated databases so that information can be readily accessible, shared; and commonly used.
- Assistance with grant writing.

The following are four areas in which

CALFED could assist local watershed groups: provide support; support resource conservation education; sponsor stakeholder meetings; and improve the use and usefulness of watershed based information centers.

- **Provide support to existing and future watershed programs (e.g. for coordinators, equipment, per diem to attend CALFED meetings, etc.) and coordinate training on monitoring, grant writing, and watershed assessment.**

Many local watershed programs lack staff or a support organization (for example, a local Resource Conservation District or local university foundation) sufficiently funded to carry out many of the initial development activities needed to inform, organize, and assist local communities to address watershed management issues. Presently, the majority of these local programs depend on some source of outside funding to function. Acquiring these outside sources of funding is often a competitive process. Established, well organized programs with skilled grant writers, completed watershed assessments, or monitoring programs have distinct competitive advantages over new or developing local programs. This situation leaves new or developing programs in an endless circle of unsuccessful attempts to gain initial funding for their efforts.

Once the initial phase of local watershed program development has been completed, there is a continuing need for outside funding and technical support to sustain these community based watershed programs over the long term. Therefore the CALFED Watershed Program will provide funding and

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technical assistance to help local watershed programs meet basic organizational, administrative and support costs in two distinct phases:

CALFED will provide funding and technical support to 'start-up' local watershed programs. CALFED will make this funding and technical support available for the purpose of helping local watershed programs function more efficiently and effectively and perform watershed work in a science-based fashion. The willingness of CALFED to fund new local watershed programs will be determined based on established principles and how well the local program contributes to the broad goals and objectives of the CALFED Program

This funding and technical support is designed to help local watershed programs meet three basic needs. **First**, funding could be used to hire or support staff, and meet basic administrative costs such as phones, FAX, postage, equipment, and travel. **Second**, "start-up" funding or technical support could also be available to provide staff training in such basic skills as communication techniques, computer use, grant writing, and contract management. **Third**, technical support or assistance could be provided to help local programs with community organizing, process facilitation, conflict resolution, and building organizational capacity. Support would also be provided to help local programs access and use existing sources of information, data, and other tools needed to begin the process of watershed assessment, planning and management.

CALFED anticipates making this 'start-up' funding available to local programs for a

limited amount of time (perhaps two years). After this start-up period, local watershed programs will have developed adequate capacity to successfully compete for other sources of outside funding or to generate funding from within the community to meet many of their administrative and program management costs. As these community based, locally-led watershed management programs continue to develop the second phase of CALFED funding and technical support will be available. CALFED funding during this phase will be available to partially meet the administrative costs associated with on-going local watershed program activities. This phase of funding is designed to supplement those outside and locally developed sources of funding acquired by local programs during their initial development period. The full range of technical support needed by watershed programs to help meet their information management, training, watershed assessment, planning, management and monitoring needs will continue to be provided.

■ **Support resource conservation education at the local watershed level.**

The goal of resource conservation education is the development of a citizenry that is capable and involved with making informed decisions on resource issues. Local watershed programs provide one of the best opportunities to educate local citizens and particularly students about their local watershed and its relationship to the bioregion. Existing funding for conservation education is limited and offered through various school districts, agency and foundation programs which do not appear to be well coordinated. There is great

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variability in the availability of conservation education programs in schools and local communities.

CALFED will provide funding for conservation education programs at the local watershed level as well as for regional programs that match and help meet the broad goals and objectives of the CALFED Program.

One example of this approach could be CALFED providing funding and technical support to expand and accelerate the introduction and use of conservation education programs such as the Adopt-A-Watershed Program into local communities. The Adopt-A-Watershed Program is a dynamic strategy which helps to bring educators, students, and the community together to better address local natural resource issues, and help to bring about a sustained commitment to addressing those issues. Implementation of this environmental education program occurs at both the regional and local level. Funding could be provided to the Adopt-A-watershed Program to help establish "Regional Leadership Institutes", which would be used to train and support community teams working to introduce the Adopt-a-Watershed educational process into their communities. In turn CALFED could then provide continuing financial support to those local communities and schools that successfully use the Adopt-A-watershed process.

CALFED will also consider funding and support for other conservation education curriculum where there is clear community interest and support for their use, and these educational programs contribute to the broad

goals and objectives of the CALFED Program.

CALFED's interim restoration program has provided funding support for regional interpretative centers such as the Sacramento River Discovery Center. These interpretative centers provide valuable environmental educational opportunities for local and regional audiences, helping people to better understand watersheds, resource values, and the benefits realized by sound watershed management activities. The CALFED watershed program will expand support and financial assistance to new and existing regional interpretative centers, for the purpose of establishing a linked network of centers throughout the geographic scope of the CALFED Program.

- **Sponsor general stakeholder workshops, BDAC Watershed Work Group Meetings, etc. to allow for exchange of information on local watershed program successes and failures.**

There are many groups working on similar watershed problems throughout the CALFED region. The successes and failures of one group may be relevant to another group and result in a more efficient expenditure of funds and time by the group. There is no existing program that allows groups to come together and share their experiences and learn from each other.

CALFED will sponsor public workshops to provide a forum for exchange of information between watershed groups. CALFED will continue working with agencies, educational institutions, and other interested parties to host the workshops. Furthermore, the

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workshops and public meetings will provide a forum for stakeholders to provide comments on the progression of the Watershed Program.

- **Improve the use and usefulness of existing or future resource information centers to assist watershed groups conducting watershed activities. The resource information center(s) will include information about funding opportunities and relevant information on watershed activities.**

The CALFED Watershed Management Program is committed to supporting and facilitating the exchange of information, data, and knowledge between all people interested involved in, or effected by watershed management activities. One way of supporting and facilitating this information exchange is through the use of Resource Information Centers. Many agencies, universities, organizations and institutions compile, manage and distribute information of value to local watershed management programs. Geographic Information Systems (GIS) displaying data, historical information, physical features and other watershed attributes in easily used map forms have become valuable tools for local watershed managers. These tools will become increasingly important as more and more people become involved in watershed management activities. Local watershed programs also rely on existing resource centers to provide information on grant funding opportunities, lists of other watershed programs and the activities in which they participate, data collected by various watershed programs, and other

useful information. However, watershed groups desire the ability to do "one-stop-shopping" and determine what information is available that is relevant to them.

The CALFED watershed program will help improve the use and usefulness of selected resource information centers by providing funding and support to help meet basic infrastructure and management needs, so these centers can adequately meet the information demands of existing and future watershed programs. In addition to helping meet basic infrastructure requirements of these resource information centers, CALFED will also support cooperative efforts to link existing and future resource information centers so that information is easily available to, and exchanged with watershed program users. Funding opportunities from various organizations will either be linked or collated into a single database. Data from or information on watershed activities within the CALFED area will be easily accessible.

Having data and information readily available for watershed management purposes does not guarantee that this information will be actually used and provide the anticipated benefits to the goals and objectives of the CALFED Program. CALFED recognizes the need to aggressively market the value and utility of these information centers to the broad range of potential users within the geographic scope of the CALFED Program. Therefore, the CALFED watershed program will assist and support efforts of select resource centers to expand their outreach and training efforts to watershed programs and other potential users, for the purpose of significantly increasing the use and value of these resource centers to support watershed management activities

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INTEGRATION AND COLLABORATION WITH OTHER CALFED COMMON PROGRAMS

Integrate the CALFED Watershed Program with the other CALFED Common Programs.

Many of the projects and initiatives of the other CALFED common programs are activities that in part constitute watershed management of the San Francisco Bay and Delta watershed system. The Watershed Program will identify those activities that support watershed management. It will integrate supported projects, programs and other initiatives with those of the other common programs to ensure that the cumulative result of implementation is a coherent suite of activities directed at achieving the goals and objectives of the CALFED Program.

Active liaison among the common programs will be a critical part of this integration. The free exchange of information among the common programs will improve the integration of the diverse activities supported by the Programs. The Watershed Program will provide the liaison to maintain consistent communication among all the common programs. The consistent flow of information will improve the opportunities to coordinate efforts in order to more efficiently and effectively pursue the goals of the overall Program.

- **Identify the relationship of the Watershed Program with the other CALFED Common Programs**

(Ecosystem Restoration, Water Quality, Water Use Efficiency, Water Transfers, and Levee Stability).

The common programs were designed to achieve the goals of the Bay-Delta Program. They are discretely described in order to segment the overall effort into separately manageable, but highly inter-related units. The common programs, along with other CALFED elements such as storage and conveyance form a comprehensive, integrated program.

The Watershed Program will work with the other common programs describe the types of activities of each, and will identify the relationships among those activities to watershed management and the Watershed Program. Gaps and areas of duplication will be identified, and recommendations will be made to fill those gaps, and to eliminate unnecessary duplication.

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WATERSHED PROCESSES AND RELATIONSHIPS

Define the relationship between watershed processes and the CALFED Program goals and objectives.

Watersheds in their entirety, including human settlements, are highly complex. The constituents of watershed systems are dynamically interrelated in an extensive and intensive manner. Threading through this complexity are some processes (such as hydrologic processes, geomorphic processes, and biological and human social processes) that, although highly interrelated with other processes, can be discreetly identified. Nearly all watershed processes are themselves a part of and/or are made up of other processes. Because of this complexity, the Watershed Program will define those processes which are discreetly identifiable, the relationship of identified processes to one another, and the relationship of processes to the achievement of CALFED Program goals and objectives.

Identification of these processes is important because watersheds function according to the physical laws of nature. It is only with the articulation of human values and the comparison of watershed condition with those values that a watershed can be said to be in good or poor condition. The Watershed Program will relate the physical, biological and social processes to the values stated in the CALFED Program to help improve the understanding of the impacts of past and present human activities on watershed conditions.

The Watershed Program examination of watershed processes will involve several parts, each of which will further the understanding of the complex makeup of watershed systems.

- **Describe the basic biological and/or physical functions and processes of a watershed, including the linkages from upper watersheds to lower watersheds to the Bay-Delta.**

The physical form of a watershed is affected by, and affects, the nature of the biological components of the watershed. The relationship of the hydrologic processes to forests, grasslands and stream corridors, for instance, is tightly linked to the habitats that arise from those relationships. Processes occurring in one part of a watershed often have impacts in other parts of the watershed that may be removed in time or space. The Watershed Program will develop, or support the development of, materials and programs that clarify these direct and indirect interactions. The following three areas are part of the Watershed Program's role in describing watershed processes and their part in achieving the goals and objectives of the Bay-Delta Program.

1. Identify the watershed functions and processes that are relevant to the CALFED goals and objectives.

The Watershed Program will produce or support the production of materials that illustrate watershed processes and effects on watershed conditions, from upper to lower reaches of the Bay-Delta watershed. The Watershed Program will support research and education to help clarify areas where

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understanding of processes and interrelationships needs expansion.

2. Describe how land use and other human activities affect/affected watershed functions and processes in ways that are favorable for or adverse to the CALFED goals and objectives.

Human activities make up part of many watershed processes. Those activities affect, and are affected by those processes. The Watershed Program will produce or support the production of materials and training that will illustrate those relationships. It will also support research to clarify areas where the understanding of the human role in these processes can be improved.

3. Illustrate the benefits (including economic) that accrue from watershed plans and projects designed to achieve the CALFED goals and objectives.

Many benefits of watershed management improvement are not directly quantifiable. The Watershed Program will develop, or support the development of, illustrations of intangible improvements as well as directly quantifiable benefits. By developing a comprehensive suite of benefit analysis techniques, a more complete picture can be drawn of the effectiveness of the Watershed Program in improving watershed conditions through improving watershed management.

- **Maintain a set of principles for participation that will provide the basis for setting criteria for funding of watershed activities which can be supported by**

CALFED.

To help provide continuity of the Watershed Program through time, a foundation of basic principles is necessary. The nature of adaptive management is such that strategies for achievement of CALFED goals and objectives must change over time to adapt to changes and increased knowledge. The principles used to develop and/or adjust the strategies will remain consistent; however, in order to provide stable direction to future efforts, adaptive management will be applied. Although the principles will be adjusted themselves as experience and changing condition warrant, any adjustments will be less frequent and smaller in scope than the changes in strategies.

The Watershed Program will develop and maintain a set of watershed principles with the participation and assistance of IWAT and other stakeholders. Working with IWAT and other stakeholders, the Watershed Program will build on these principles to develop criteria to help guide funding decisions and to aid in assessing the success of programs and projects. The Watershed Program will complete the initial development of these principles and criteria during the first year of Stage 1 Implementation. As necessary the watershed principles and criteria will be revisited and revised over the life of the CALFED Program. IWAT and other stakeholders will be asked to participate in any such revisions.

- **Identify examples of watershed activities that improve the basic biological and/or physical functions and processes of a watershed.**

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The definition of watershed activities is not an exclusive one. Just as watersheds themselves are complex, the activities that add up to watershed management must also be complex. To assist in describing the types of activities that will achieve the goals and objectives of the Watershed Program, a set of examples will be developed. These examples will illustrate the wide range of activities that may run from local land use planning to individual wetland restoration or education program development. In addition to describing the nature of the activity, the examples will also illustrate the impacts of the activities on various watershed processes, and the ways in which those activities contribute to the attainment of the Bay-Delta Program goals and objectives.

- **Establish and maintain watershed restoration, maintenance, conservation, and monitoring assistance to aide local watershed programs and private landowners in their project concept, design, and implementation. (Assistance could be provided by government agencies, academia, private consultants, and/or landowners.**

Watershed maintenance, conservation and restoration are complex, long-term undertakings. The Watershed Program will provide support to encourage and assist with development of local expertise through providing, or providing for the delivery of, assistance, training, and follow-up technical advice to foster watershed health improvement.

The Watershed Program will compile and maintain a list of individuals and

organizations with broad expertise and on-the-ground project experience which will be available upon request to assist local watershed groups and private landowners. The list will include sources of assistance with a broad range of issues, including project planning, development and implementation; monitoring program establishment and use; data management; educational program development and implementation; land use planning; and regulatory compliance procedures, among others. The sources listed in the compilation will also be varied, and will include academia, private consultants, governments and government agencies, not for profit organizations, private individuals with successful projects and programs, and local watershed groups. The compilation will be available in many formats, including print and electronic media, and will be distributed widely throughout the watershed of the Bay-Delta system.

- **Help resolve issues of liability and indemnification for environmental restoration work.**

In the implementation of many phases of watershed management activities, issues of various types of legal liability frequently arise. These legal issues constitute part of the social processes that affect watershed condition. Some of the present structure of legal liability policy at the local, state and federal level impede the participation of some agencies and individuals in implementing watershed activities and information gathering. The Watershed Program will work with stakeholders in the watershed of the Bay-Delta system, including legislators and the legal community to establish legal policies that will encourage

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involvement in watershed improvement activities without compromising avenues of recourse for individuals or entities who may be negatively affected by some watershed activities.

Because many laws and legal processes were originally established to prevent abuse of natural resources, there are many instances in which restoration or rehabilitation work is treated the same as destructive development. Adjusting present policy to allow and even promote improvement of natural resource management will encourage and allow a much broader range of participation in collaborative efforts to effectively manage the watershed of the Bay-Delta. The Watershed Program will work over the long term to facilitate the establishment of policies that will ease inadvertent liability and indemnification restraints on widespread participation in watershed activities.

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IMPLEMENTATION STRATEGY

INTRODUCTION

The Watershed Program supports and encourages locally-led watershed activities that benefit the Bay-Delta system. Realizing that watershed approaches may vary, a set of guiding principles has been established that emphasizes the importance of community involvement and support. The Watershed Program principles were developed with stakeholders of diverse interests and geographic regions. These principles will guide the development of the Watershed Program and criteria for funding watershed activities.

WATERSHED PROGRAM PRINCIPLES

CALFED supports watershed activities that:

I. Are Community Based

- Promote community and landowner involvement;
- Have demonstrable community support;
- Contribute to ongoing local watershed management;
- Foster the development and maintenance of local watershed efforts;
- Reach out to and encourage participation of local leadership;
- Reach out to and encourage participation of individuals with diverse interests; and
- Foster collaboration among multiple interests.

II. Collaborate with and Are Consistent with the CALFED Program

- Are consistent with the goals and objectives of the CALFED Program;
- Promote information exchange with the CALFED Program; and
- Promote local community involvement in the CALFED Program.

III. Address Multiple Watershed Issues

- Address multiple ecosystem issues;
- Are consistent with related resource protection activities and applicable regulations;
- Contribute to beneficial environmental results;
- Improve ecosystem values and watersheds that directly or indirectly impact the Bay-Delta system; and
- Are consistent with general principles of good watershed management such as listed in Appendix ____.

IV. Are Coordinated with and Supported at Multiple Levels:

- Enhance coordination between the CALFED Program, government agencies, and local community groups.

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V. Provide for On-going Implementation

- Identify performance measures to achieve goals and objectives;
- "Leverage" other funding sources and institutional mechanisms; and
- Possess the flexibility to allow for adaptive management.

VI. Include Monitoring Protocols

- Measure success and are consistent with CALFED monitoring protocols (to be developed);
- Support coordination of local and regional monitoring efforts; and
- Promote citizen monitoring programs where appropriate.

VII. Increase Learning and Awareness

- Promote conservation education in local watersheds, schools, and/or to the general public;
- Enhance local skills in watershed management;
- Promote technology/information transfer between local watershed groups; and
- Deliver technical assistance and information to local watershed groups.



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STAGED IMPLEMENTATION

The Watershed Program will be implemented in three stages: Stage I (2000-2007); Stage II (2008-2015); and Stage III (2016-2030). This staged implementation process will allow for an adaptive management philosophy and process to be employed. Knowledge gained from monitoring and research will be incorporated into staged implementation and decision-making through a feedback process as part of adaptive management. In addition, throughout the Staged Implementation, the Watershed Program will adhere to the following objectives:

Implement a Strategy which will Assure Support and Long-Term Sustainability of Local Watershed Activities

- **Building on existing programs, develop a long-term plan that identifies the types of assistance that may be needed, the array of government agencies* and/or other entities best suited to deliver this assistance, and the funding levels necessary to carry out these long-term assistance programs.**

This action will require an inventory of needs for assistance and assistance available. The inventory will be provided to local watershed programs and to governments and their agencies, in order to provide greater opportunities for collaboration and partnership building. In addition, this item will develop estimates of the cost to fulfill the assistance needs identified in order to

promote the long-term efforts necessary for effective watershed management.

- **Assure that watershed programs are included in all CALFED Program planning and funding cycles for the duration of the CALFED Program.**

Because watershed management is perpetual, it will require long-term dedicated support. The Watershed Program will seek to assure that adequate funding will be made available to continue the growth of effective operational watershed management for at least the expected life of the CALFED Program.

- **Assure that stakeholders are fully-informed at all phases of the development of the Implementation Strategy.**

To be truly effective, the Watershed Program must include all stakeholders in its implementation. Federal, state, county, tribal, and other governments and agencies; local, regional, and national interest group; private individuals; and other watershed constituents will be involved in developing and implementing the Watershed Program.

- **Fund and implement watershed restoration, maintenance, conservation, and monitoring activities that support the goals and objectives of CALFED.**

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STAGE I ACTIONS

Stage I is the seven-year period commencing with the final decisions on the Programmatic EIS/EIR. Stage I implementation is scheduled to begin January 2000.

The Watershed Program is designed to be coordinated and integrated with existing and future local watershed programs and to provide technical assistance and funding for watershed activities that support the goals and objectives of the CALFED Program. The actions during Stage I are a mix of watershed coordination, restoration, maintenance, and conservation activities, as well as demonstration projects designed to show benefits to the Bay-Delta system without harm to existing watershed resources. Stage I includes the following actions.

1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities that support the goals and objectives of the CALFED Program (years 1-7).
2. Identify priority locations and implement watershed activities which benefit restoration in the Bay-Delta system (years 1-7).
3. Assist local watershed groups and government agencies to address common issues, including roles and responsibilities, funding support, technical assistance, information exchange. Ensure effective communication and implementation among government agencies and stakeholder groups (years 1-7).
4. Develop a funding process and provide watershed stewardship funds to build the capacity of local watershed groups (years 1-7).
5. Improve the use and usefulness of existing or future watershed resource information center(s) to assist in obtaining information on funding opportunities, technical assistance, and data storage and retrieval (years 1-7).
6. Ensure the completion of project level environmental documentation and permitting; assist with documentation and permitting processes as appropriate (years 1-7).
7. Illustrate the benefits (including economics) that accrue from watershed plans and projects designed to achieve CALFED goals and objectives.
8. Establish, fund, and maintain watershed restoration, maintenance, conservation, and monitoring assistance to aide local watershed groups and private landowners in project concept, design, and implementation (years 1-7).
9. Coordinate with other CALFED and non-CALFED programs on watershed related activities (years 1-7).

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Note to Reader:

Stage II and III actions are under development.

STAGE II ACTIONS

Stage II actions will also be implemented over a seven year period (2008 - 2015). Actions implemented during this stage will largely depend on the results of Stage I. However, it is anticipated that the Watershed Program will continue to fund and implement watershed restoration, maintenance, conservation, and monitoring activities that support the goals and objective of the CALFED Program. In addition, the Watershed Program will continue to assist local watershed groups with coordination, technical assistance, monitoring, etc. as needed.

STAGE III ACTIONS

Stage III is the final stage of the CALFED Program. Watershed actions during this stage will be implemented from 2016 - 2030. Adaptive management and monitoring will be key components during this implementation phase. Stage III actions will be based upon the results of Stage I and II.

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ADAPTIVE MANAGEMENT AND MONITORING

ADAPTIVE MANAGEMENT

Adaptive management is the process of adjusting or refining management actions as a process unfolds and results are obtained. It is an interactive and iterative approach to decision making that incorporates feedback loops to evaluate actions and inject new information as it becomes available. Adaptive management begins by implementing actions most likely to achieve implementation objectives, given today's knowledge. Experimental management is included where improved knowledge is essential. Results are monitored and actions modified as necessary to achieve management goals.

Adaptive management is a fundamental concept of the CALFED Program. For the Watershed Program, adaptive management will be applied to actions implemented as part of the Watershed Program and to the Watershed Program itself.

For watershed actions, adaptive management and monitoring is fundamental in understanding watershed conditions and the effect of the actions on these conditions. Given the uncertainties involved in watershed management, an adaptive management approach is essential to establishing a learning process that reduces these uncertainties over time. Adaptive management and monitoring processes will measure the success of meeting objectives and help understand what corrective steps need to be taken when these objectives are not being achieved.

Adaptive management will also be applied to the Watershed Program. Adaptive management will be used as a structured decision-making process that includes monitoring, research, staged implementation of the program; a feedback process to integrate knowledge gained from monitoring and research; and the flexibility to change the program in response to new information. Adaptive management may also be relevant in institutional arrangement and funding scenarios.

MONITORING

Monitoring is also a fundamental component of the CALFED Program and directly related to the adaptive management cycle. Monitoring will gauge the success of the Watershed Program actions and provide feedback necessary for successful implementation. The Watershed Program is working closely with CMARP and stakeholders in developing watershed management monitoring protocols. Because some watershed actions are focused on education and outreach, it is anticipated that the Watershed Program will also include some non-traditional monitoring protocols, such as monitoring to gauge public awareness on particular watershed issues.

For a more complete discussion of the CMARP effort, see the CMARP appendix to the CALFED Programmatic EIS/EIR.

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WATERSHED PROGRAM FINANCING

FINANCIAL STRATEGY

The CALFED Program has developed a Financial Strategy for funding the implementation of the CALFED Program. In order to provide a basis for building consensus and assurances for all stakeholders that program implementation will incrementally benefit all interests, CALFED has focused attention on developing more detailed definition of actions which could be taken in the first stage of Phase III. Implementation of these actions would be subject to project-specific environmental documentation and permits. Costs will be introduced in detail in Phase III of the CALFED Program, when project-specific information for each component will be prepared.

Sharing the cost of implementing the preferred alternative based on the benefits being created is the cornerstone principle of the CALFED Financial Strategy. The fundamental principle is that costs will be paid over time by the beneficiaries of the actions, as opposed to seeking payment from those who, over time, may have been responsible for causing the problems being experienced in the Bay-Delta system. However, some benefits created by the solution are difficult to quantify. Benefits associated with restoring ecosystem health, for example, are not measurable in the same way as the benefits of water supply improvements. This implies that while the benefits-based approach is useful as a guide, benefits cannot be used in a strictly quantitative way to arrive at an answer

regarding sharing of costs.

During Phase I of the CALFED Program, it became apparent that both public money and user money would be necessary to fund the long-term implementation. In principle, public money will be used to fund actions that provide public benefits, and user money will be used to fund actions that create user benefits.

For further detail of the Financial Strategy for the CALFED Program please refer to _____.